

ARNOLD ARBORETUM

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HURRICANE DAMAGE AT THE ARBORETUM

RAIN had been falling rather consistently for four days when on September twenty-first, over large areas in New England, the downpour assumed the proportions of a deluge. Rivers in western Massachusetts were at flood stage, and everywhere the ground was soggy from excessive rain. By late afternoon the rain slackened and the wind increased to a gale. At 4:50 p.m. when the lights went out in the Administration Building staff members expected a "blow", but certainly did not anticipate the hurricane which caused frightful damage throughout New England. The Arboretum lost approximately 1500 trees, and a recent newspaper estimate of the number of trees lost in Massachusetts—only one of the New England states touched by the storm—reached the appalling figure of 100,000,000. There is no way of checking such an estimate, but with definite information concerning the number of trees destroyed in a few Boston suburbs, this figure seems possible.

This ruinous hurricane originated in the Caribbean Sea, a veritable hotbed for such storms. Ordinarily, such a malignant manifestation of Nature's power spends itself before reaching the North Atlantic States or else passes out to sea. For some reason, this particular storm chose to follow an unusual course. The U. S. Weather Bureau first reported it a few hundred miles northeast of Puerto Rico. At that time it was moving at the rate of about 17 miles an hour in the direction of the Bahamas and Florida where preparations were being made for its arrival. Strangely enough, it did not touch Florida, but took an unexpected turn to the northeast, aiming its fury at some point off the Carolina coast.

On Wednesday morning the storm was charted off Cape Hatteras, and meteorologists believed that it would continue its curve out to sea where it would spend itself harmlessly as most hurricanes fortunately do. Instead the storm changed its course a second time, and with increasing velocity headed directly up the Atlantic coast. This second turn might have been reported except for one ironic fact. Governmental agencies had done a thorough piece of work in sending out warnings to ships so that there was no vessel in its path to report this most recent

deviation from the storm's expected course. All ships had either sailed far out to sea or else stayed in port. Consequently when the storm travelling at the rate of 60 miles an hour, struck the coast off Atlantic City, no ships were in its path to report the change of direction.

The Blue Hills Observatory of Harvard University is approximately $5\frac{1}{2}$ miles south of the Arboretum. Because of its situation on a high hill, gusts of wind were measured at the observatory during the height of the storm blowing in excess of 150 miles an hour. Wind velocities of 111 miles an hour were measured there in three five-minute periods, 6:05 p.m., 6:20 p.m., and 7:12 p.m. The wind averaged above 60 miles an hour shortly after 4:00 p.m. and remained above that figure until 7:45 p.m. The official high for wind velocity in the Boston area during this storm was given by the U. S. Weather Bureau as 87 miles an hour at 5:23 p.m. The much higher figures at the Blue Hills Observatory were "due apparently to the Hill's so obstructing the free flow of wind that it has to flow over the top at a higher rate." It is safe to assume that wind velocities probably in excess of 100 miles an hour were experienced in certain exposed portions of the Arboretum.

Hemlock Hill in the Arboretum is one of the higher points between Boston and the Blue Hills. With wind velocities at times approximating 125 miles an hour it is understandable that great damage was done to the particular plantings on the southern or exposed side and top of that hill. To the older friends of the Arboretum, this damage will seem the most serious. Part of the old stand of native hemlock is absolutely flattened, the trees now forming a mass of broken timber that will take months to clean away. Fortunately, most of the hemlocks on the lee side of the hill are still standing, particularly those at the rear of the rhododendron collection, so that they will still form a good background for the ericaceous plants when the latter are in bloom.

The beautiful collection of evergreen trees and some of the magnolias at the rear of the Administration Building are almost complete wrecks. The older popular collection, between Peter's Hill and the railroad has been practically leveled, and the charming plantation of red and white pine on the southeast slope of Bussey Hill is a mass of fallen timber.

Several hundred-year old specimen trees crashed to the ground during the height of the storm, but fortunately there is still a bright side to all this devastation. By actual count, there are only a dozen plants which have been uprooted that are not duplicated elsewhere in the collections. Most of our highly prized specimen trees are still in perfect condition. Of approximately 1500 trees blown down or very badly wrecked, a few have been pulled back into position, since it was usually the larger trees which were blown over. By far the majority of injured or destroyed trees were native in the Arboretum, trees which added materially to the natural beauty of the plantings, but which were not prominent in the collections.

Many of the trees which blew over would probably have remained firmly in the ground if it had not been for the heavy rains preceding the storm, but in such a case, breakage might have been greater.



PLATE XIV

Views of hurricane damage in Arboretum 1938

1. The old poplar collection. 2. In the conifer collection.
3. At rear of Administration Building. 4. Hemlock Hill. 5. Remains of a stately pine.
6. At rear of Administration Building. 7. A fallen pin oak. 8. A century old tulip poplar.

Approximate numbers of trees lost.

Hemlocks, oaks, etc. on Hemlock Hill	400
Pines, poplars, magnolias, etc. at rear of Administration Building	200
Conifers in conifer collection	130
Red and white pines between the Overlook and South Street	100
Poplars and oaks on Peter's Hill	60
Miscellaneous trees on Peter's Hill	200
Pyrus, Malus, etc. at Forest Hills gate	50
Miscellaneous trees elsewhere in the Arboretum	350

This was not Boston's first hurricane. The last one occurred 123 years ago on September 23, 1815* and from various newspaper reports at the time was almost as devastating as the recent one. Many Boston buildings were "unroofed" or "unslated", and the Common suffered almost as much as it did this time. Twenty trees on the Common were "torn up by the roots and prostrated" carrying fences with them. Five thousand fruit and forest trees in Dorchester alone were ruined. As with the present hurricane, the damage in and around Boston was nothing compared to what it was in Providence where \$5,000,000 worth of damage was done, which in those days represented very much higher values.

The Arboretum has suffered and suffered badly. It will take months to clear away the wreckage, and many years to grow plants to take the places of the mature ones lost. Nevertheless, the damage might have been much worse. After all, striking damage is limited to a few exposed areas. Individuals intimately acquainted with the Arboretum plantings will note trees lacking here and there in the grounds. Those who occasionally visit the institution, after the winter clean-up is completed will notice few changes. The conspicuously beautiful landscape features for the most part remain essentially unchanged.

The Arboretum staff is industriously engaged in a general rehabilitation plan, and work will be continued throughout the winter. The extra expense involved has been covered by an authorized withdrawal of funds from the institution's fortunately good credit balance. It is, however, practically impossible for us to continue the normal seasonal work of planting, pruning, fertilizing, etc. when we are faced with the immediate problem of removing the remains of between 1400 and 1500 trees.

Notes

By the will of the late Miss Grace M. Edwards of Beacon Street, Boston, \$25,000 was bequeathed the President and Fellows of Harvard University for the benefit of the Arnold Arboretum, this sum to be added to its endowment.

Home owners who have suffered the loss of trees due to the recent hurricane can claim such losses in their next income tax returns, according to expert legal advice on the subject. Although many an old specimen tree that fell during the storm is irreplaceable in dollars and cents, nevertheless the claiming of such a loss in the next income tax report might help compensate in a very small way.

DONALD WYMAN

*Farrar, John. An account of a violent storm of the 23d of September, 1815. *American Acad. of Arts & Sciences* (First Series) Vol. IV: 92, 1818.